M.Sc. Thesis

FLOOD RISK PROFILING OF HEALTHCARE FACILITIES IN THE NETHERLANDS

Context. In the Netherlands, historically much has been invested in flood prevention. However, there has been little focus on preparation before and during a flood. Without plans for preparedness and emergency management, floods can extensively disrupt the regular functioning of the healthcare system. The floods in the Netherlands, Germany and Belgium in July 2021 revealed what the consequences could be, and that we need to better prepare healthcare facilities, even during a short-lived flood. For example, the VieCurie Medical Centre in Venlo had to evacuate more than 200 patients due to an anticipated flood threat, whereas some elderly homes were flooded and evacuation of their vulnerable patients completed although flooded. This experience indicates the potential lack of awareness and preparedness of healthcare facilities to flood risk.

Figure 1. Flooding of an elderly home in Valkenburg aan de Geul in the summer of 2021 (source: R. Frissen, Sevagram).

Objectives and questions. The overall objective of the research is to assess the flood risk profile of healthcare facilities in the Netherlands. The research could also analyse in detail the risk profiling in South Holland. Questions to be answered may include: *(i)* what is the level of risk of healthcare facilities to different flooding scenarios? *(ii)* what is their risk considering flooding of access roads? *(iii)* what is the risk with respect to the national level?

Methodology. Available flood scenarios for the Netherlands will be used to consider the hydraulic effects of the flood as a function of time, in terms of impact to healthcare facilities. Different flood return periods (10, 100, 1000 and 10000 year) could be considered. A GIS analysis will be used to locate and profile the exposure of healthcare facilities and access roads, as well as to visualise the risk profile of healthcare structures. Eventually, the research could also explore the risk awareness and preparedness of healthcare facility managers, alongside their feedback on the results of the GIS analysis.

This M.Sc. topic is part of the PDPC (Pandemic & Disaster Preparedness Center) Frontrunner Project "Pandemic lessons for flood disaster preparedness".

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